BTEC Assignment Brief

Qualification	Pearson BTEC International Level 3 Foundation Diploma in Engineering Pearson BTEC International Level 3 Diploma in Engineering Pearson BTEC International Level 3 Diploma in Electrical and Electronic Engineering Pearson BTEC International Level 3 Diploma in Mechanical Engineering Pearson BTEC International Level 3 Diploma in Digital Engineering Pearson BTEC International Level 3 Diploma in Manufacturing Engineering Pearson BTEC International Level 3 Extended Diploma in Engineering Pearson BTEC International Level 3 Extended Diploma in Electrical and Electronic Engineering Pearson BTEC International Level 3 Extended Diploma in Mechanical Engineering Pearson BTEC International Level 3 Extended Diploma in Digital Engineering Pearson BTEC International Level 3 Extended Diploma in Manufacturing Engineering
Unit number and title	**Unit 24: Maintenance of Mechanical Systems**
Learning aim(s)	**A:** Examine the characteristics of lubricants and their application in mechanical systems
Assignment title	Characteristics and Application of Lubrication in Mechanical Systems
Assessor	
Issue date	
Hand in deadline	

Vocational Scenario or Context	You are a first year maintenance apprentice in a large manufacturing company. Your supervisor has asked you to produce a maintenance document that provides details of the lubrication systems and lubricants used in the toolroom machines and to evaluate the process in place and the ability of the system to continue to provide suitable lubrication to the system. This will be used to make improvements by utilising the best lubricants for the task and for making small changes to the systems if necessary, based on recommendations that you make. You are expected to research lubricants on the internet to understand the properties of the current lubricants in used and to potentially suggest better alternatives if they exist. A final year apprentice is accompanying you in the tasks and they will be supervising you in the task. You will need to use appropriate PPE and to ensure that appropriate H&S processes are followed, including the isolation of the machinery, both electrical and mechanical, that the immediate work area is made safe and that you use appropriate signage to ensure that your work area is safe for you and others in the workshop.

Task 1	Lubrication 1. You have been allocated one of the small lathes that are in the workshop and you've been asked to review two lubrication systems, one for the machine gearbox and the other for the leadscrew. You will perform this task under supervision having taken all appropriate H&S measures including securing the work area. 2. Remove appropriate casing carefully to expose the mechanisms and ensure that there is a system to replace the parts correctly. 3. You will need to examine each system understanding how they work. You will need to produce a sketch of each system and annotate each to describe what is happening. Whilst performing these tasks you will need to evaluate what is happening: is the system performing properly, if not state why and speculate as to a possible resolution; is the system installed properly, if not state why and speculate as to a resolution; is there an original design problem, is access or positioning a problem, if it is state why and speculate as to a possible resolution of the problem. 4. You need to discover the lubricant in use. There may be a label indicating the recommended lubricant actually attached to the machine and it will be indicated in the machine manual. The workshop supervisor should be able to say what is in use. Once you know what is being used undertake research on the internet, using suitable sites, to discover what the properties are of that particular lubricant. Having understood the properties, search for an alternative and evaluate the alternative in respect of it being a suitable replacement for the lubricant currently in use. If you are unable to discover the type of lubricant in use, then suggest a possible lubricant to use and one alternative, then evaluate which one is the best suited to the lubrication task.

Checklist of evidence required	You are expected to produce a document that will have the following: 1. The name of the machine and specification, 2. A contents page, 3. An explanation of the purpose of the document, 4. A description of the purpose of each of the mechanisms examined, 5. A description of the purpose of the lubrication together with a sketch of the system. This could be a schematic diagram of the system, 6. A section that states the lubricant in use and the properties of that lubricant, together with possible alternatives that could give the same degree of protection, 7. An evaluation of the lubrication system in use and an evaluation of the lubricant in use which includes the alternative lubricant and its suitability as a replacement, *8.* A concluding section that make recommendations in respect of potential changes to the lubrication system and the lubricant that is being used.

Criteria covered by this task:	
Unit/Criteria reference	To achieve the criteria you must show that you are able to:
24/A.D1	Evaluate, using language that is technically correct and of a high standard, the characteristics of lubricants used and the process of and maintenance considerations for lubrication in two different mechanical systems, suggesting improvements to the lubrication systems.
24/A.M1	Analyse the characteristics of lubricants used and the process of and maintenance considerations for lubrication in two different mechanical systems.
24/A.P1	Explain the characteristics of the lubricants used and the process of and maintenance considerations for lubrication in two mechanical systems.

Sources of information to support you with this Assignment	Kibble, R, T., Mechanical Systems for Industrial Maintenance, Prentice Hall, ISBM 978-0130164902, 2001. Jeffrey, D., Principles of Machine Operation and Maintenance, Routledge, ISBN 978-0-7506-0293-8, 2011 Mobley, K., Maintenance Fundamentals, Elsevier Butterworth-Heinemann, ISBN 0-7506-7798-8, 2004. Mobley, K. (ed), Maintenance Engineering Handbook, McGraw-Hill, ISBN 978-0-07-182664-8, 2014 Theengineeringtoolbox.com This is a general web site for engineering and is very useful. The site is American so the spelling of words will not be “English” in some cases. The site can be searched and it contains material on the majority of topics at all levels. The internet will be a good resource generally for this subject ranging from data available from suppliers to specific information available from educational organisations. Care must be exercised in respect of the

	suitability. **Above are some examples of websites. Further useful resources may be found at** qualifications.pearson.com/en/support/published-resources.html#step1